Vaisala HMK11 Humidity Calibrator to Check TRH Probes (CALF)

I. Purpose:

This procedure describes the process for performing HMK11 Calibrator field calibration. This procedure is performed by the RESET team if, upon testing the humidity probe with the reference meter, the values are found to differ by more than +/- 4%.

II. Cautions and Hazards:

None.

III. Requirements:

- HMK11 Salt Preparation Solution Manual.
- Laptop computer with terminal emulation.
- HMK11 Calibrator Kit.

IV. Procedure:

A. Preliminary Preparations:

1. Prepare the salt solutions as instructed in the HMK11 Humidity Calibrator Operating Manual.
2. Place the lithium chloride and sodium chloride bottles in the HMK11 Humidity Calibrator and plug all holes with the rubber plugs.
3. Put the Humidity Calibrator in a location that is not in the air stream from the central heating and cooling system and let stand for a minimum of 24 hours.

B. Checking the calibration of the HMI31/HMP35 T/RH Meter

1. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the lithium chloride bottle in the humidity calibrator. If the probe and the calibrator were at different temperatures, allow at least 30 minutes before taking any readings. Otherwise, wait 10 minutes before taking any readings.
2. Take temperature and relative humidity readings until all readings stabilize (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). The RH should read 11.3 % +/- 0.5 % at normal room temperatures. If it does not, adjust

the DRY offset potentiometer on the probe until the proper reading is obtained.

3. Remove the probe and replace the plug on the lithium chloride bottle. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the sodium chloride bottle in the humidity calibrator.

4. Take temperature and relative humidity readings after exactly 10 minutes (the readings will continue to drift even after 10 min.) (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). Check Greenspan's Calibration Table for the proper relative humidity reading at the calibrator temperature (approximately 75.5 % at normal room temperatures).

   Note: The probe should agree within +/- 0.5 %. If it does not, adjust the WET offset potentiometer on the probe until the proper reading is obtained.

5. If the WET potentiometer was adjusted, repeat the lithium chloride check. If the DRY potentiometer needs further adjustment, repeat the sodium chloride check. Keep repeating the checks until no further adjustments of the DRY and WET potentiometers are required.

6. If a potassium sulphate solution is available, remove the probe and replace the plug on the sodium chloride bottle. Replace one of the bottles with one containing the potassium sulphate solution. Plug all holes in the bottle. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the potassium sulphate bottle in the humidity calibrator. Wait at least 5 hours before taking any readings.

7. Take temperature and relative humidity readings until all readings stabilize (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). Check Greenspan's Calibration Table for the proper relative humidity reading at the calibrator temperature (approximately 97.5 % at normal room temperatures). The probe should agree within +/- 3 %. If it does not, send the probe back to the manufacturer for recalibration.

C. Checking Calibration of Relative Humidity Probes

1. Connect the probe to be checked to a datalogger that was programmed to read the probe.

2. Remove the protective filter from the probe. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the lithium chloride bottle in the humidity calibrator. Wait at least 30 minutes before taking any readings.

3. Take probe temperature and relative humidity readings until all readings stabilize (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). The probe should read 11.3 % +/- 0.5 % at normal room temperatures. If it

does not, adjust the DRY offset potentiometer on the probe until the proper reading is obtained.

4. Remove the probe from and replace the plug on the lithium chloride bottle. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the sodium chloride bottle in the humidity calibrator. Wait at least 30 minutes before taking any readings.
5. Take probe temperature and relative humidity readings until all readings stabilize (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). Check Greenspan's Calibration Table for the proper relative humidity reading at the calibrator temperature (approximately 75.5 % at normal room temperatures).

   Note: The probe should agree within +/- 0.5 %. If it does not, adjust the WET offset potentiometer on the probe until the proper reading is obtained.
6. If the WET potentiometer was adjusted, repeat the lithium chloride check. If the DRY potentiometer needs further adjustment, repeat the sodium chloride check. Keep repeating the checks until no further adjustments of the DRY and WET potentiometers are required.
7. Remove the probe from and replace the plug on the sodium chloride bottle. Replace one of the bottles with one containing the potassium sulphate solution. Plug all holes in the bottle. Remove the plug from and place the probe in the appropriate hole (proper diameter) of the potassium sulphate bottle in the humidity calibrator. Wait at least 5 hours before taking any readings.
8. Take probe temperature and relative humidity readings until all readings stabilize (temperature within +/- 0.1 deg C and RH within +/- 0.1 %). Check Greenspan's Calibration Table for the proper relative humidity reading at the calibrator temperature (approximately 97.5 % at normal room temperatures).

   Note: The probe should agree within +/- 3 %. If it does not, send the probe back to the manufacturer for re-calibration.
9. Record the date, start-time, end-time, and any comments in the Site Data Log.

V. References:

1. Dick Hart, procedure
2. Greenspan’s Calibration Table

VI. Attachments:

None.